Name: **Quiz (7)-Sec (8)-Ch(11&12)** **S.N:**

ID : Key Phys 101 (Term 032)-(*F. Enaya*)

Show your steps clearly for full credit.!!

Q1 A disk has a rotational inertia of 6.0 kg.m^2 and a constant angular acceleration of 2.0 rad/s^2. If it starts from rest find the work done during the first 5.0 s by the net torque acting on it

$$\tau = I\,\alpha \quad = 6 \times 2 = 12 \text{ N.m}$$

$$\Delta\theta = \tfrac{1}{2}\,\alpha\, t^2 \quad = \tfrac{1}{2} \times 2 \times 5^2 \quad = 25 \text{ rad.}$$

$$W = \tau\,\Delta\theta = 12 \times 25 = 300 \text{ J}$$

Q2. A uniform wheel of radius 0.5 m rolls without slipping on a horizontal surface. Starting from rest, the wheel moves with constant angular acceleration 6.0 rad/s^2. Find the distance traveled by the center of mass of the wheel from t = 0 to t = 3 s.

$$\Delta\theta = \tfrac{1}{2}\,\alpha\, t^2 \quad = 27 \text{ rad.}$$

$$\Delta\theta = \Delta S / r \Rightarrow \Delta S \text{ (the distance)} = 27 \times 0.5 = 13.5 \text{ m}$$